



1150159 - R8 SDMS

January 7, 2009

Sent via email

Eric Johnson  
U.S. Environmental Protection Agency  
Region 8, 8ENF-T  
999 18<sup>th</sup> Street, Suite 300  
Denver, Colorado 80202-2466

RE: Progress report for November 2008 activities - Hecla Mining Company Apex Site (EPA ID No. UT982589848, Docket No. RCRA-8-99-06)

Dear Mr. Johnson:

Per paragraph 64 of the Order, enclosed is a copy of the November 2008 progress report for your records.

If you have any questions please do not hesitate to call me at (208) 769-4112 or e-mail at [pglader@hecla-mining.com](mailto:pglader@hecla-mining.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Paul L. Glader", written over a horizontal line.

Paul L. Glader  
Manager Environmental Services

Encl

Cc: HMC Legal Dept (w/o attachments)  
John Jacus, Esq. (DG&S)



January 7, 2009

Sent via U.S. Mail

Glenn Rogers, Chairman.  
Shivwits Band of Paiute Indian Tribe  
6060 West 3650 North  
Ivins, Utah 84738

John Krause  
Bureau of Indian Affairs  
400 North 5<sup>th</sup> Street, Floor 12  
Phoenix, AZ 85004

Kelly Youngbear  
BIA Southern Paiute Agency  
P.O. Box 720  
St. George, UT 84771

RE: Progress report for November 2008 activities - Hecla Mining Company Apex Site (EPA ID No. UT982589848, Docket No. RCRA-8-99-06)

Dear Chairman Rogers, Mr. Krause and Ms. Youngbear:

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Cc: HMC Legal Dept. (w/o attachments)  
John Jacus, Esq. (DG&S) (w/o attachments)  
Eric Johnson (USEPA, Region VIII) (w/o attachments)



January 6, 2009

**MEMORANDUM TO:** Apex File  
**COPIES TO:** distribution  
**FROM:** Paul Glader  
**SUBJECT:** Progress Report No. 55 for period ending November 30, 2008; Pond 2 Final Closure - Apex Site, Washington County, Utah

---

### **Summary**

The monthly visual inspection, per the long term monitoring plan, was conducted on November 29. No unusual conditions were noted. Monuments were surveyed.

### **Geotechnical Monitoring**

Based on data collected through July 2008:

- 1 - Settlement rates of most monuments have decreased to zero
- 2 - Settlement of the reclaimed impoundment top surface has stabilized with only two monuments decreasing minimally over the first six months of 2008.

The October 2008 survey data analysis is being completed - no settlement changes have been noted.

### **Work Planned for Next Period**

Visual inspection of site

Settlement monument survey - quarterly basis

### **Cost and Schedule**

Committed costs in November 2008 were \$522. Total project to date committed is approximately \$1,289,000.

### **Supplemental Attachments**

November 2008 site inspection report

November 2008 cost report

November 11, 2008 Surface Monument Survey Data Review - Monster Engineering Inc.

# Annual Site Inspection Summary Sheet - Apex Site - Pond 2

Hecla Mining Company - Long-Term Maintenance and Monitoring Plan

## Form 1 of 4 - Summary

Date: <u>11-29-08</u>			
Inspector: <u>T. Brown</u>			
Cover System Component	Potential Problem	Allowable Limits	Limits Potentially Exceeded
Site Perimeter	Erosion or Fencing Issues	NA	NA
Cover System (outslopes, top, rock)	Subsidence	Minor: ponding < 1" some gullying / erosion	Yes <input checked="" type="checkbox"/> * No <input type="checkbox"/>
		Significant: see Table 2	Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Embankment Slope Stability	excessive movement or surface cracks > than 1"	Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Gullying	on top	depth > 1" Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
		at embankment crest or on outslope	depth > 2" Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
		w/in normal flow channel in diversion channel	no gullying allowed Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
		w/in diversions at toe of impoundment outslope	no gullying allowed Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
		in diversion channel at any other location	NA NA
	Erosion Protection Stability	rock, subsiding or missing	Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Seepage	no colored seepage allowed (red, blue, yellow w/ crystallization)	Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
Runoff Control System	Diversion Channel	rock in place, channel not moving, fence stable	Yes <input checked="" type="checkbox"/> * No <input type="checkbox"/>
	Diversion Swales	rock in place, no silting in or head cutting	Yes <input checked="" type="checkbox"/> * No <input type="checkbox"/>
	Excessive silt build up at fence lines in diversion channel	allowed if not effecting cover system	Yes <input checked="" type="checkbox"/> * No <input type="checkbox"/>

\* Mark all areas of concern or requiring repairs on attached site map.

Annual Site Inspection - Apex Site - Pond 2

Hecla Mining Company - Long-Term Maintenance and Monitoring Plan

**Form 2 of 4 - Site Perimeter**

Inspection Date: <u>11-27-08</u>	
Inspector: <u>Tanner</u>	
<b>Visible Outlying Areas</b>	
Observed Condition:	<u>No New problem</u>
Observed Damage:	<u>None</u>
May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
<b>Property Boundary Fence and Gate (walk fence line)</b>	
Observed Condition:	<u>Fence and signs are fine</u>
Observed Damage:	<u>None</u>
Potential Corrective Actions:	<u>None</u>
May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
<b>All Upgradient Areas (areas that drain onto property)</b>	
Observed Condition:	<u>Things have not changed. We've had a dry fall</u>
Observed Damage:	<u>None</u>
May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

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Annual Site Inspection - Apex Site - Pond 2

Hecla Mining Company - Long-Term Maintenance and Monitoring Plan

**Form 3 of 4 - Impoundment**

Inspection Date: _____			
Inspector: _____			
<b>Outslopes</b>			
Observed Performance:	Rock Cover Subsidence:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Excessive Slope Movement (failure):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Gully Development:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Observable Leachate (colored):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Excessive Siltation (at slope toe):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
Observed Damage: <u>None</u>			
Potential Corrective Actions: <u>None</u>			
<b>Top (top surface soils)</b>			
Observed Performance:	Cracking (>1" width):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Settlement / Evidence of Ponding:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Erosion / Gullyng:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
Observed Damage: <u>None</u>			
Potential Corrective Actions: <u>None</u>			
<b>Erosion Protection Layer (rock)</b>			
Observed Performance:	Rock Staying in Place:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Rock Subsiding:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
	Missing Rock:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
Observed Damage: <u>None</u>			
Potential Corrective Actions: <u>None</u>			

Mark all areas of concern or requiring repairs on attached site map.

**Annual Site Inspection - Apex Site - Pond 2**

**Hecla Mining Company - Long-Term Maintenance and Monitoring Plan**

**Form 4 of 4 - Diversion Channel and Swales**

Date: <u>11-29-08</u>			
Inspector: <u>Benjamin</u>			
<b>Diversion Channel</b>			
Observed Performance:	Erosion Protection in place:	Yes <u>Y</u> No <u>  </u>	May require repair: Yes <u>  </u> * No <u>Y</u>
	Normal Flow Channel in place:	Yes <u>Y</u> No <u>  </u>	May require repair: Yes <u>  </u> * No <u>Y</u>
	Encroaching on Site Fencing:	Yes <u>  </u> No <u>Y</u>	May require repair: Yes <u>  </u> * No <u>Y</u>
Observed Damage:	<u>None</u>		
Potential Corrective Actions:	<u>None</u>		
<b>Diversion Swales</b>			
Observed Performance:	Erosion Protection in place:	Yes <u>Y</u> No <u>  </u>	May require repair: Yes <u>  </u> * No <u>Y</u>
	Flow Channel Silting In:	Yes <u>  </u> No <u>Y</u>	May require repair: Yes <u>  </u> * No <u>Y</u>
	Head Cutting:	Yes <u>  </u> No <u>Y</u>	May require repair: Yes <u>  </u> * No <u>Y</u>
Observed Damage:	<u>None</u>		
Potential Corrective Actions:	<u>None</u>		

Mark all areas of concern or requiring repairs on attached site map.

Activity	2004 Budget	Revised Budget May 2004	Committed Cost this Period	Cumulative Committed Cost To Date 11-30-08	Forecasted Cost To Complete	Forecasted Final Cost	Remarks on Forecast to Complete
<b>Phases I through III (Completed February 2006)</b>							
Phase I - Drain Excess Liquid From Tailings	189,200	72,700		67,928	0	67,928	
Phases II, IIA + IIB - Evaporate Excess Liquid	6,000	8,000		242,882	0	242,882	
Phase III - Regrading & Final Cover System	337,000	342,050		504,742	0	504,742	
Field Indirect Costs	164,500	213,568		378,517	0	378,517	Includes Jan + Feb 2006 long term monitoring costs
Head Costs	18,700	18,700	0	33,324	0	33,324	
<b>Subtotal Phases I through III</b>	<b>715,400</b>	<b>655,018</b>	<b>0</b>	<b>1,227,393</b>	<b>0</b>	<b>1,227,393</b>	
<b>Long Term Monitoring (through FY 2010)</b>							
Site Inspections			182	6,371	884	7,255	
Settlement Monitoring			0	6,750	3,675	10,425	
<b>Consultant Support:</b>							
Annual Geotechnical Engineer Inspections				2,495	18,100	20,595	Includes settlement monitoring data analysis
Vegetation Monitoring			0	0	20,000	20,000	Allowance for surveys in FY 2008 - 2010
Site Conditions Review - MEI			340	6,814	2,987	9,801	
Site Conditions Review - SVL Analytical			0	2,079		2,079	
Erosion Repair Review - MEI				2,927	573	3,500	
Revegetation Review - Bamberg					3,500	3,500	
<b>Maintenance:</b>							
Erosion Repair Allowance				21,941	7,500	29,441	Erosion repair conducted April 2008
Revegetation Allowance				9,912	10,000	19,912	Revegetation conducted April 2008
<b>Head Project Management Costs:</b>							
Labor			0	2,268	7,909	10,175	
Travel expenses			0	0	1,312	1,312	
<b>Subtotal Long Term Monitoring</b>	<b>0</b>	<b>0</b>	<b>522</b>	<b>61,555</b>	<b>76,440</b>	<b>137,995</b>	
<b>Total Pond 2 Final Closure</b>	<b>715,400</b>	<b>655,018</b>	<b>522</b>	<b>1,288,948</b>	<b>76,440</b>	<b>1,365,388</b>	



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Center at (303) 312-6473.

**MONSTER ENGINEERING INC**  
ENGINEERING DESIGN MANAGEMENT

3031 bonner spring ranch road  
Lepore, Colorado 80535

(970) 221-7777  
fax (970) 224-0161

email: monster@peakpeak.com



*Paul Glader*  
11/12/08

**MEMORANDUM**

TO: Paul Glader (Hecla Mining Company)  
FROM: Doug Gibbs (Monster Engineering Inc.)  
DATE: 11/4/08  
SUBJECT: **Surface Monument Survey Data Review – Apex Site**

Surface monument surveying has been conducted quarterly at the Apex Site by Alpha Engineering since January of 2006. Based on data collected through July 2008:

- 1) Settlement rates of most monuments have decreased to near zero.
- 2) Settlement of the reclaimed impoundment top surface has stabilized with only two monuments decreasing minimally over the first six months of 2008.

All data shown in the following table and graphs has been corrected based on maintaining a zero elevation change at Monument #10 (at the gate). This monument (#10) is the baseline from which all other monuments are surveyed, is located outside of the impoundment, and should show no movement between monitoring periods. Total and 2008 survey monument elevation changes since installation are shown in the following table.

Monument	Total Elevation Change (Jan. 4, 2006 to July 8, 2008)		Elevation Change – 2008 (Dec. 13, 2007 to July 8, 2008)	
	(feet)	(inches)	(feet)	(inches)
1	-0.11	-1.3	0.00	0.0
2	-0.09	-1.1	0.00	0.0
3	-0.20	-2.4	-0.02	-0.2
4	-0.04	-0.5	0.00	0.0
5	-0.05	-0.6	0.00	0.0
6	-0.03	-0.4	0.00	0.0
7	-0.27	-3.2	0.00	0.0
8	-0.15	-1.8	-0.01	-0.1
9	-0.09	-1.1	0.00	0.0
10 (baseline @ gate)	NA	NA	NA	NA
11 / Main (impoundment center)	-0.05	-0.6	0.00	0.0
Average	-0.11	-1.3	-0.00	-0.0

NA – baseline monument - data corrected to show no movement

Most apparent monument movement from period to period can be attributed to surveying accuracy limitations as the data shows individual monuments both increasing and decreasing in elevation. However, when data for all monuments is "corrected" by keeping the baseline monument's (#10) elevation change to zero, then a general trend of decreasing elevations becomes apparent.

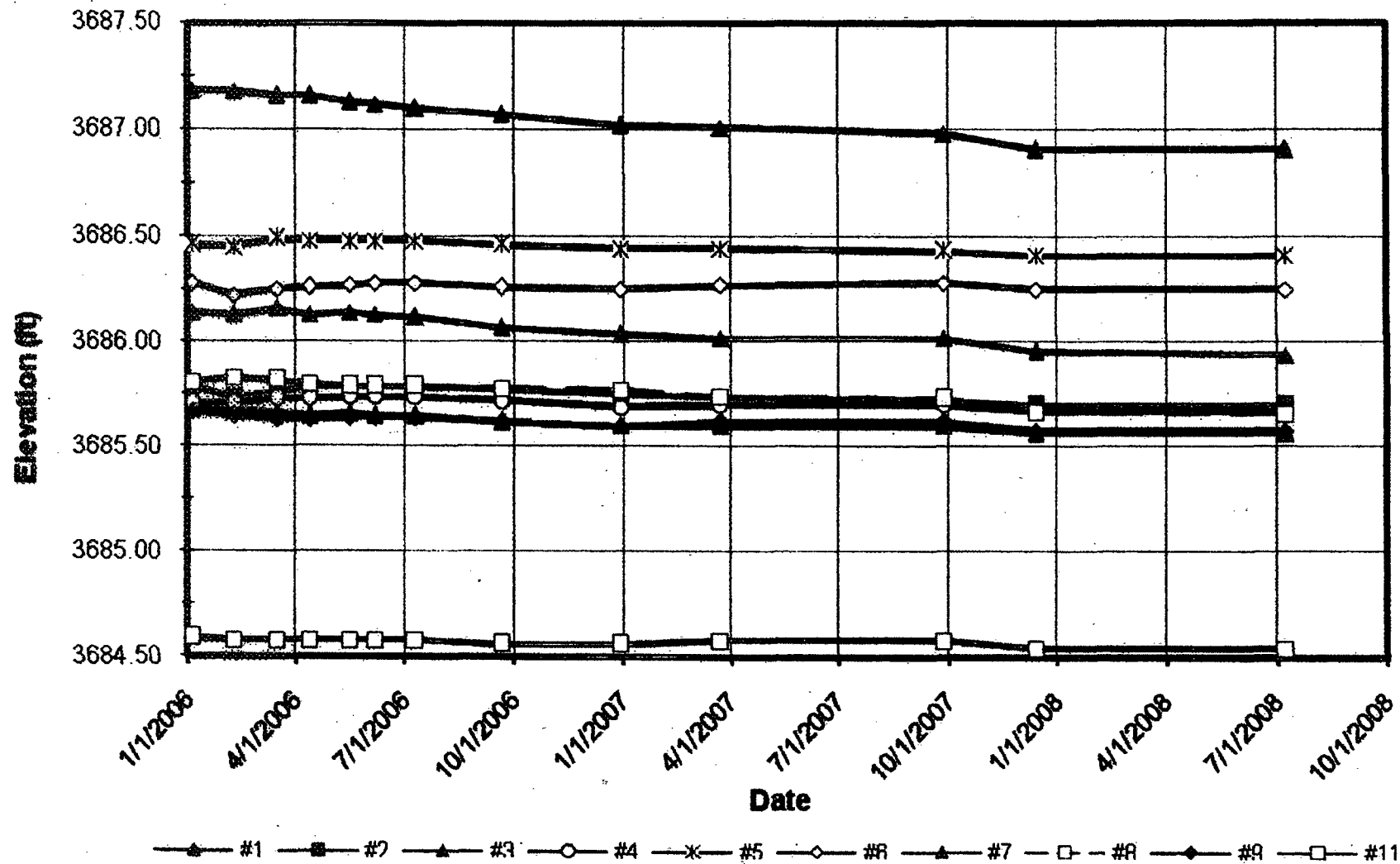
In summary the data shows that roughly the northern half of the impoundment has settled between 0.05 and 0.27 feet. The southern half of the impoundment has remained very consistent with very little to no settlement (0.0 to 0.05 feet). The largest measured settlement is, as expected, near the center of the impoundment (monitor #7) at -0.27 feet. Slightly greater settlement in and nearer the center of the impoundment is to be expected as significant quantities of fill were placed in this area during construction. Additionally, greater settlement should be expected on the northern half of the impoundment based on the locations and methods utilized to place the original cover materials (prior to final reclamation activities). According to Chris Gypton and Alan Wilson, cover materials were initially placed in the southwest corner and generally moved across the impoundment towards the northeast corner. This created a mud wave of unconsolidated waste which moved towards this corner, and eventually a thicker deposit of unconsolidated waste materials.

There continues to be no concerns to date with settlement. There are no low spots and no signs of ponding rain water. As expected with long-term consolidation, the data shows that settlement rates are slightly decreasing over time. Consolidation of waste materials and final reclamation cover materials appears to be very minimal and decreasing. Additionally, it is highly unlikely that any liquids are leaving the impoundment.

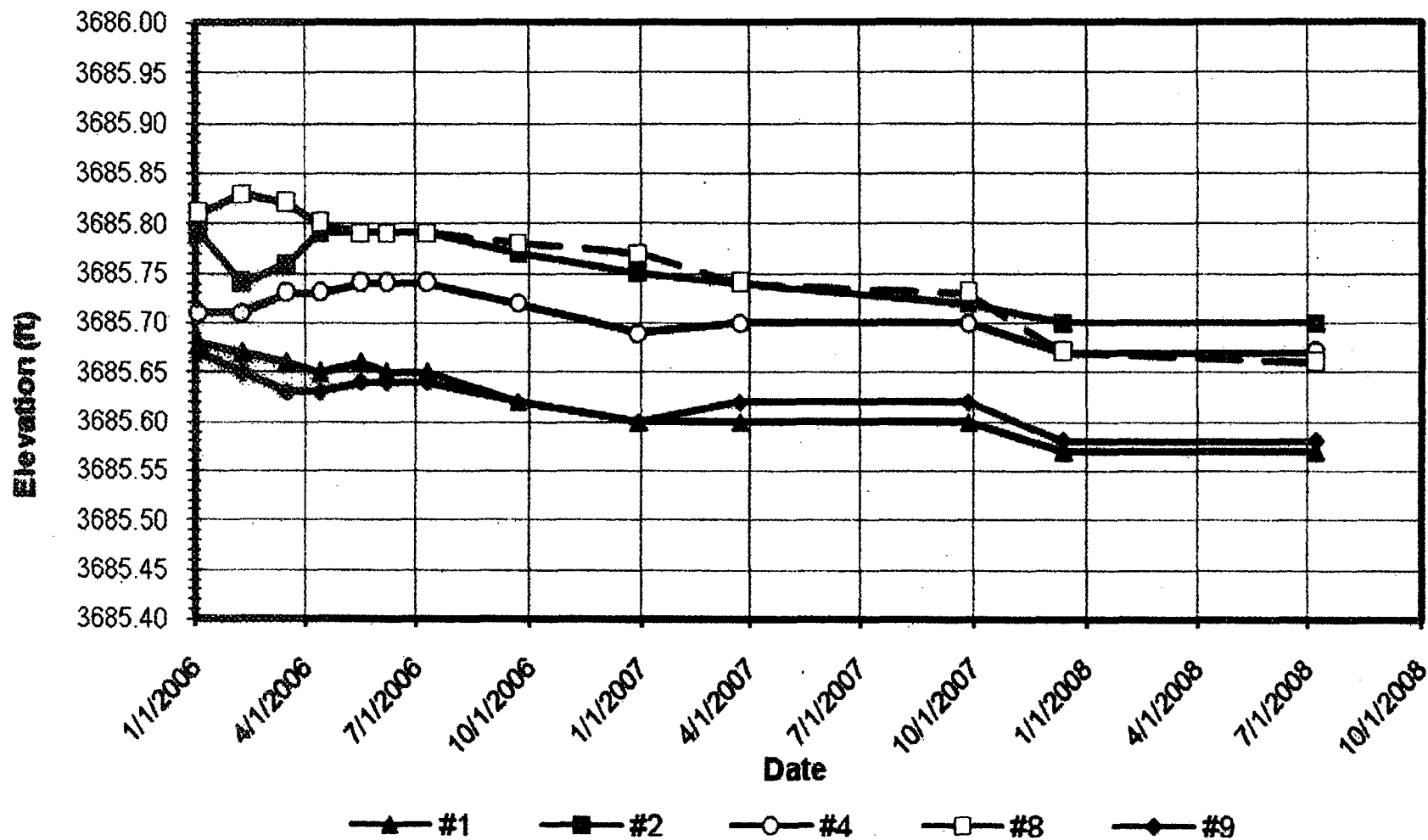
All elevation data provided by Alpha Engineering is presented graphically on the following pages. The first graph shows all monuments (except monitor #10 the baseline point) on a scale that allows all data to be compared. The next five graphs have expanded "Y" axes scales in order to more clearly show elevation changes, and for ease of comparison between graphs. A monument location map (provided by Alpha Engineering) is attached on the last page of this document. Included on this map are contours showing approximate total settlement of the top surface since installation of the monuments.

Based on data collected to date, MEI recommends that Hecla continue with their current plan and collect elevation data semi-annually. Please contact me if you have any questions concerning this review.

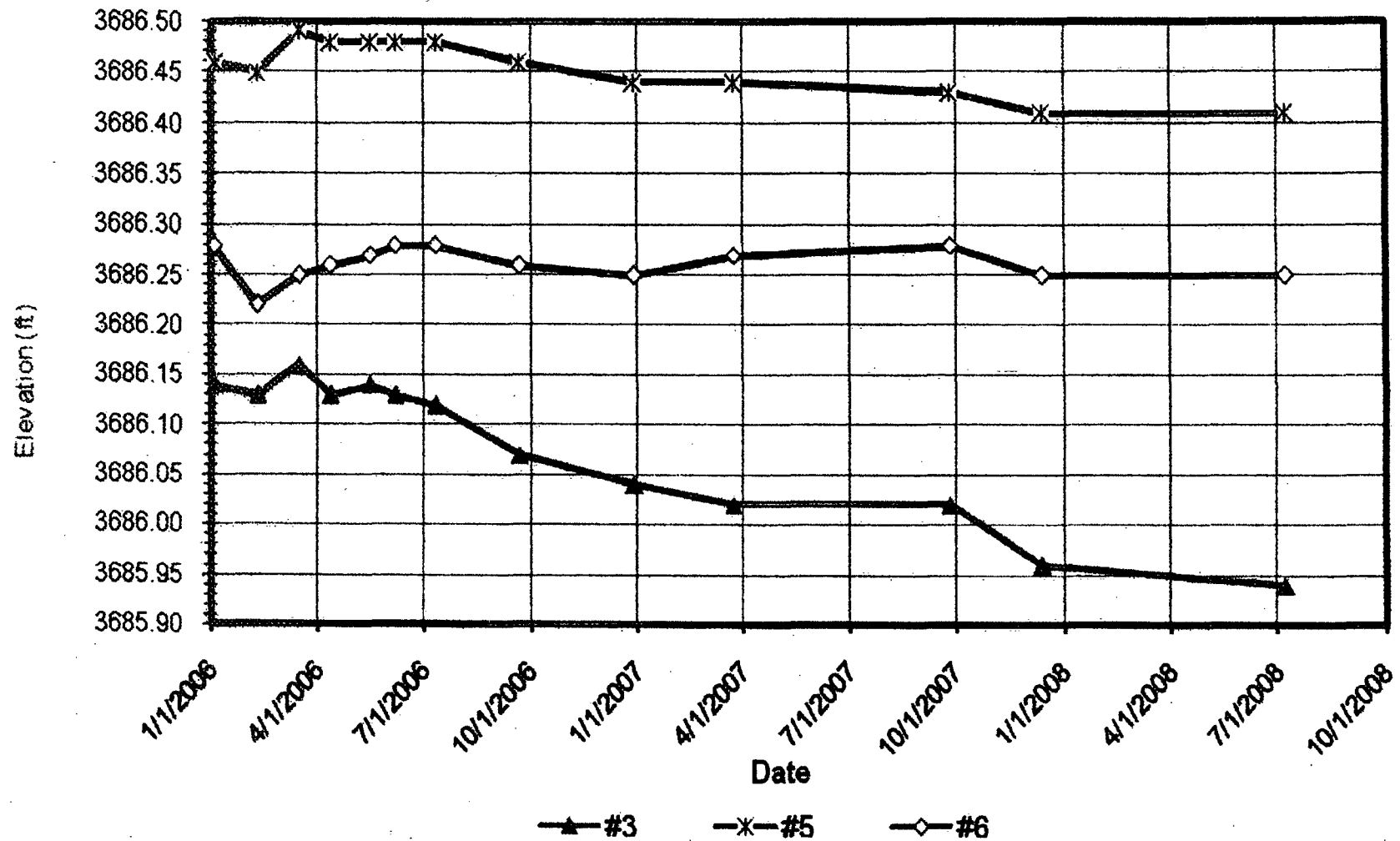
### Apex Pond 2 - Settlement Monument Elevations



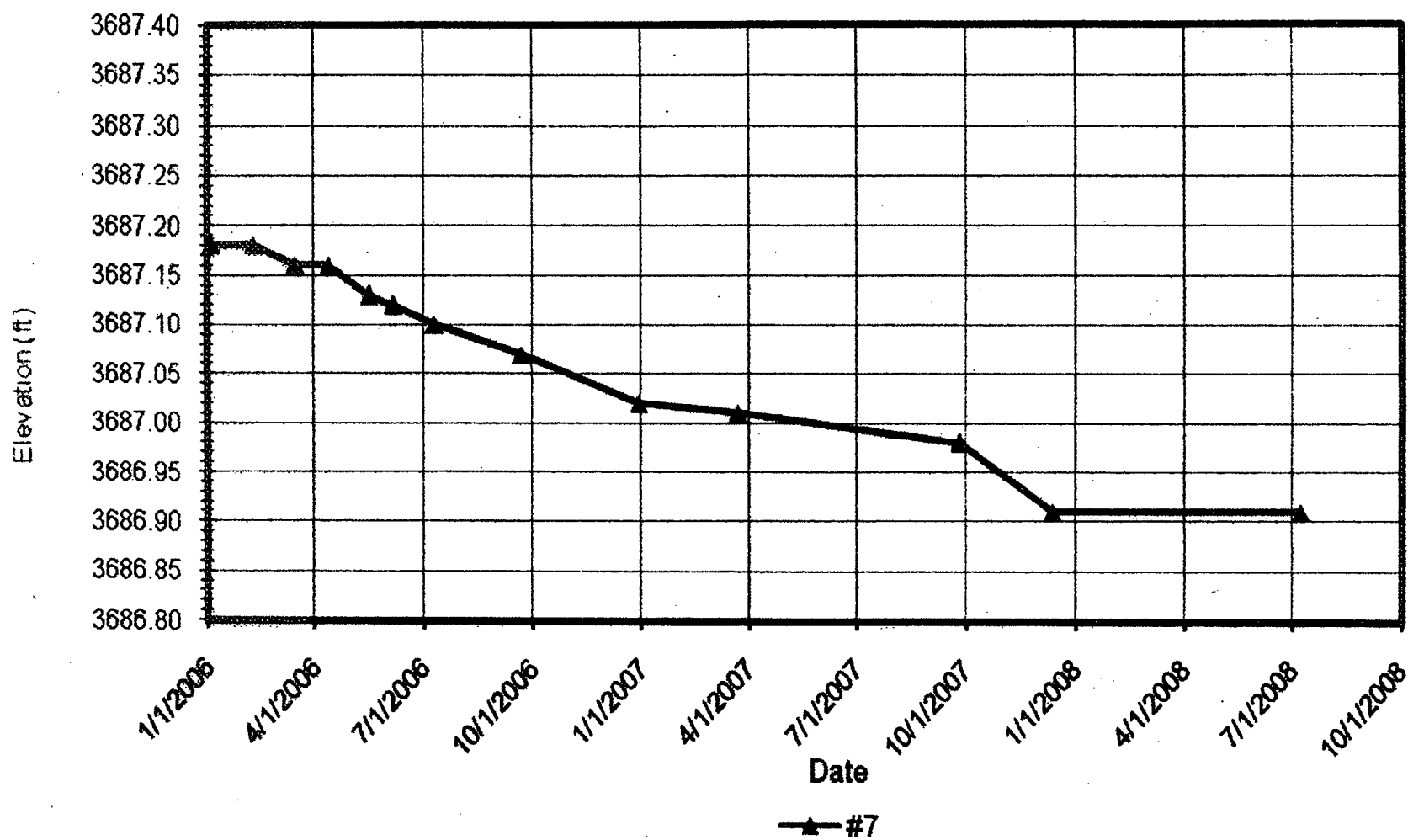
## Apex Pond 2 - Settlement Monument Elevations



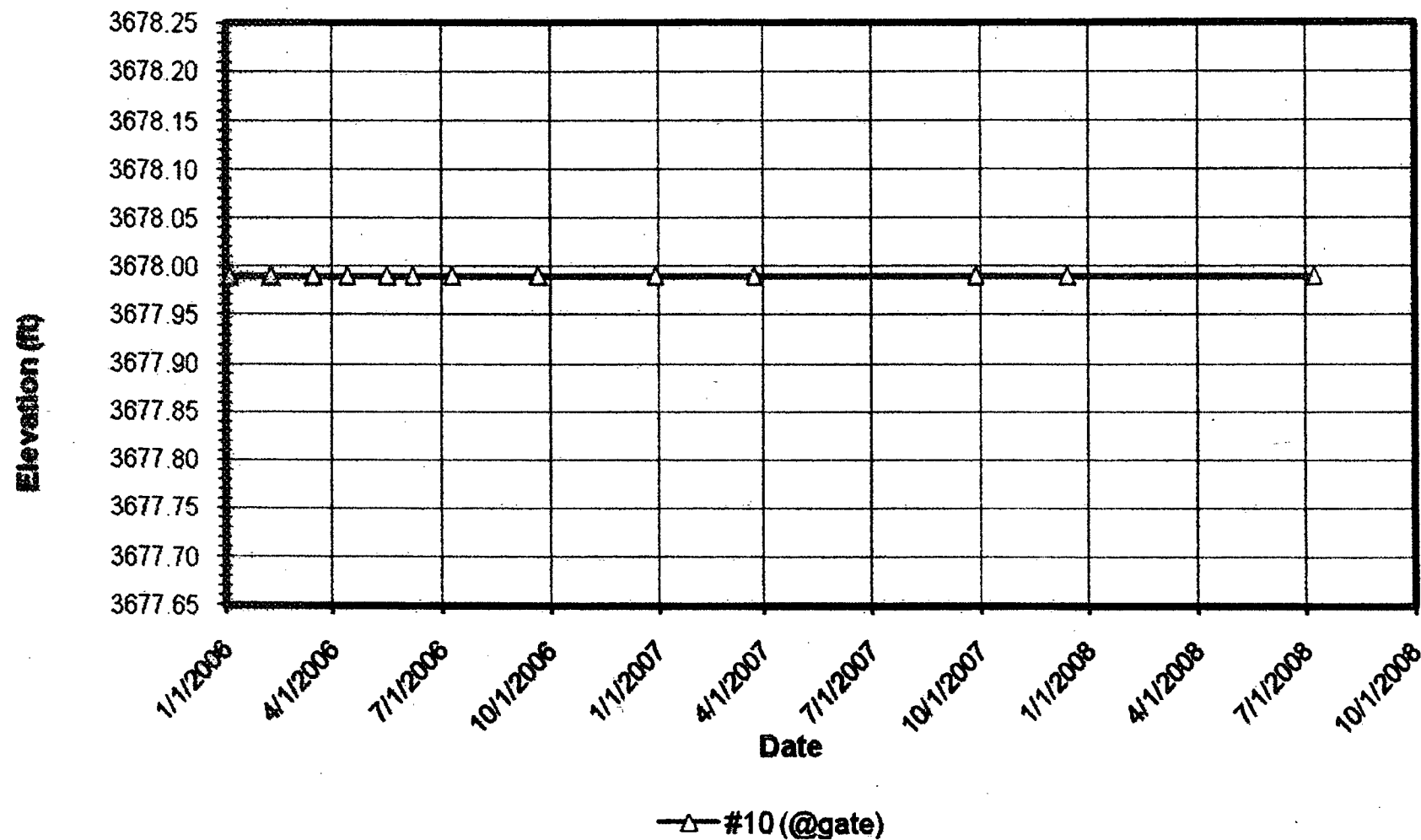
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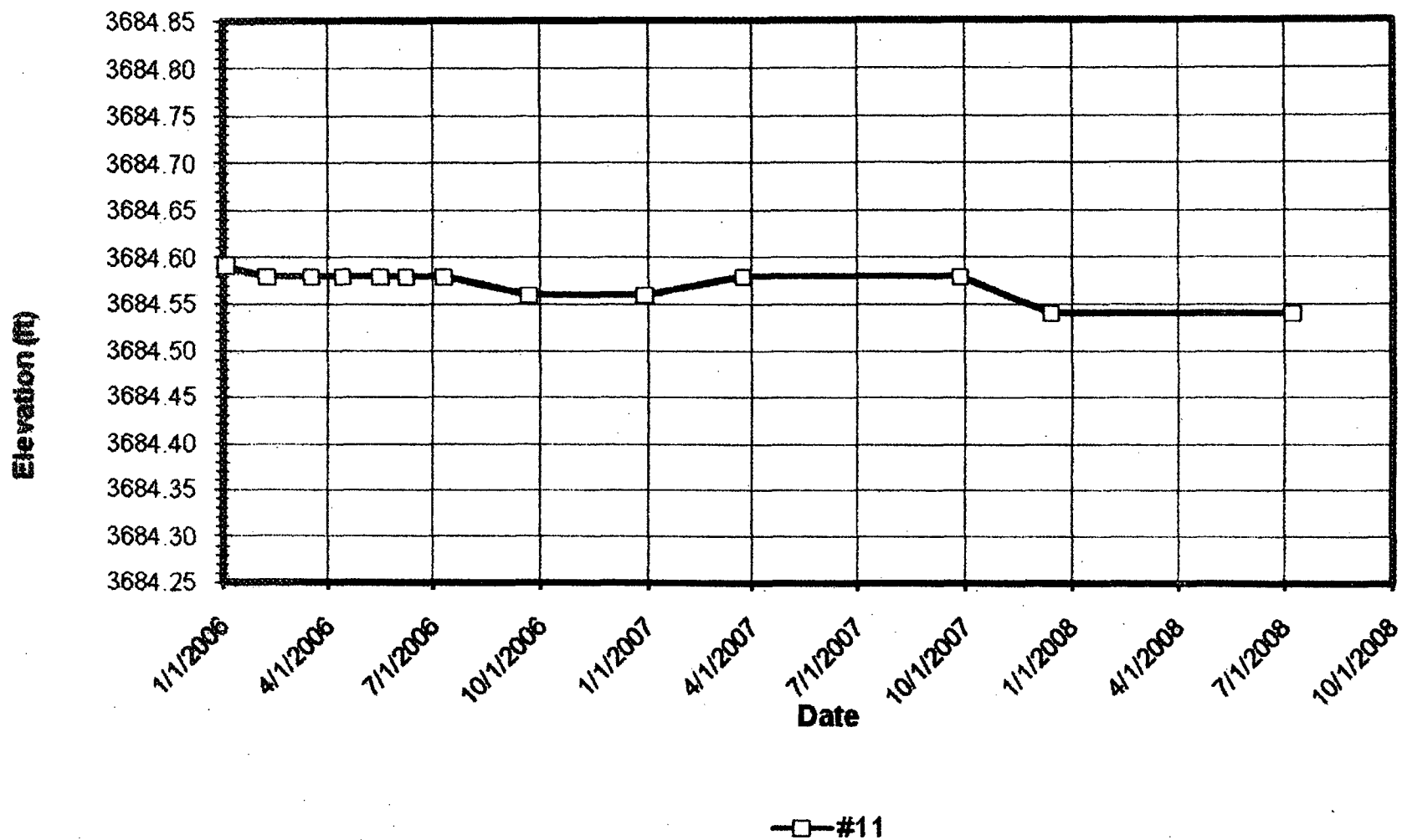


## Apex Pond 2 - Settlement Monument Elevations





### Apex Pond 2 - Settlement Monument Elevations





**Fw: Apex - Monthly for Nov**  
**Eric Johnson to: Amy Swanson**

01/08/2009 01:07 PM

The reports keep coming...

—— Forwarded by Eric Johnson/R8/USEPA/US on 01/08/2009 01:06 PM ——



Paul Glader  
<pglader@hecla-mining.com  
>

01/07/2009 10:55 AM

To Eric Johnson/R8/USEPA/US@EPA  
cc

Subject Apex - Monthly for Nov



Apex Pond 2 - progress rpt complete, november 2008.pdf

**Fw: Apex - December report**  
**Eric Johnson to: Amy Swanson**

01/26/2009 01:31 PM

----- Forwarded by Eric Johnson/R8/USEPA/US on 01/26/2009 01:30 PM -----



**Paul Glader**  
<pglader@hecla-mining.com  
>

To Eric Johnson/R8/USEPA/US@EPA  
cc

01/23/2009 03:48 PM

Subject Apex - December report



Apex Pond 2 - progress rpt complete, december 2008.pdf



January 7, 2009

Sent via email

Eric Johnson  
U.S. Environmental Protection Agency  
Region 8, 8ENF-T  
999 18<sup>th</sup> Street, Suite 300  
Denver, Colorado 80202-2466

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Manager Environmental Services

Encl

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John Jacus, Esq. (DG&S)



January 7, 2009

Sent via U.S. Mail

Glenn Rogers, Chairman.  
Shivwits Band of Paiute Indian Tribe  
6060 West 3650 North  
Ivins, Utah 84738

John Krause  
Bureau of Indian Affairs  
400 North 5<sup>th</sup> Street, Floor 12  
Phoenix, AZ 85004

Kelly Youngbear  
BIA Southern Paiute Agency  
P.O. Box 720  
St. George, UT 84771

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Manager Environmental Services

Encl

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John Jacus, Esq. (DG&S) (w/o attachments)  
Eric Johnson (USEPA, Region VIII) (w/o attachments)



January 6, 2009

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**FROM:** Paul Glader  
**SUBJECT:** Progress Report No. 55 for period ending November 30, 2008; Pond 2 Final Closure - Apex Site, Washington County, Utah

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Date: <u>11-29-08</u>			
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		w/in normal flow channel in diversion channel	no gulying allowed Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
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		in diversion channel at any other location	NA NA
	Erosion Protection Stability		rock subsidng or missing Yes <input type="checkbox"/> * No <input checked="" type="checkbox"/>
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	Excessive silt build up at fence lines in diversion channel		allowed if not effecting cover system Yes <input checked="" type="checkbox"/> * No <input type="checkbox"/>

\* Mark all areas of concern or requiring repairs on attached site map.



Annual Site Inspection - Apex Site - Pond 2

Hecia Mining Company - Long-Term Maintenance and Monitoring Plan

**Form 2 of 4 - Site Perimeter**

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<b>All Upgradient Areas (areas that drain onto property)</b>	
Observed Condition:	<u>Things have not changed. We've had a dry fall</u>
Observed Damage:	<u>None</u>
May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

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Annual Site Inspection - Apex Site - Pond 2

Hecla Mining Company - Long-Term Maintenance and Monitoring Plan

**Form 3 of 4 - Impoundment**

Inspection Date: _____			
Inspector: _____			
<b>Outslopes</b>			
Observed Performance:	Rock Cover Subsidence:	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Excessive Slope Movement (failure):	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Gully Development:	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Observable Leachate (colored):	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Excessive Siltation (at slope toe):	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
Observed Damage: <u>None</u>			
Potential Corrective Actions: <u>None</u>			
<b>Top (top surface soils)</b>			
Observed Performance:	Cracking (>1" width):	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Settlement / Evidence of Ponding:	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Erosion / Gullyng:	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
Observed Damage: <u>None</u>			
Potential Corrective Actions: <u>None</u>			
<b>Erosion Protection Layer (rock)</b>			
Observed Performance:	Rock Staying in Place:	Yes <u>X</u> No ___	May require repair: Yes ___ * No <u>X</u>
	Rock Subsiding:	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
	Missing Rock:	Yes ___ No <u>X</u>	May require repair: Yes ___ * No <u>X</u>
Observed Damage: <u>None</u>			
Potential Corrective Actions: <u>None</u>			

Mark all areas of concern or requiring repairs on attached site map.

**Annual Site Inspection - Apex Site - Pond 2**

**Hecia Mining Company - Long-Term Maintenance and Monitoring Plan**

**Form 4 of 4 - Diversion Channel and Swales**

Date: <u>11-29-08</u>			
Inspector: <u>James</u>			
<b>Diversion Channel</b>			
Observed Performance:	Erosion Protection in place:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Normal Flow Channel in place:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Encroaching on Site Fencing:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Observed Damage:	<u>None</u>		
Potential Corrective Actions:	<u>None</u>		
<b>Diversion Swales</b>			
Observed Performance:	Erosion Protection in place:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Flow Channel Silting In:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Head Cutting:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	May require repair: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Observed Damage:	<u>None</u>		
Potential Corrective Actions:	<u>None</u>		

Mark all areas of concern or requiring repairs on attached site map.

Activity	2004 Budget	Revised Budget May 2004	Committed Cost this Period	Cumulative Committed Cost To Date 11-30-08	Forecasted Cost To Complete	Forecasted Final Cost	Remarks on Forecast to Complete
<b>Phases I through III (Completed February 2006)</b>							
Phase I - Drain Excess Liquid From Tailings	189,200	72,700		67,928	0	67,928	
Phases II, IIA + IIB - Evaporate Excess Liquid	6,000	8,000		242,882	0	242,882	
Phase III - Regrading & Final Cover System	337,000	342,050		504,742	0	504,742	
Field Indirect Costs	164,500	213,568		378,517	0	378,517	Includes Jan + Feb 2006 long term monitoring costs
Hecla Costs	18,700	18,700	0	33,324	0	33,324	
<b>Subtotal Phases I through III</b>	<b>715,400</b>	<b>655,018</b>	<b>0</b>	<b>1,227,393</b>	<b>0</b>	<b>1,227,393</b>	
<b>Long Term Monitoring (through FY 2010)</b>							
Site Inspections			182	6,371	884	7,255	
Settlement Monitoring			0	6,750	3,675	10,425	
<b>Consultant Support:</b>							
Annual Geotechnical Engineer Inspections				2,495	18,100	20,595	Includes settlement monitoring data analysis
Vegetation Monitoring			0	0	20,000	20,000	Allowance for surveys in FY 2008 - 2010
Site Conditions Review - MEI			340	6,814	2,987	9,801	
Site Conditions Review - SVL Analytical			0	2,079		2,079	
Erosion Repair Review - MEI				2,927	573	3,500	
Revegetation Review - Bamberg					3,500	3,500	
<b>Maintenance:</b>							
Erosion Repair Allowance				21,941	7,500	29,441	Erosion repair conducted April 2008
Revegetation Allowance				9,912	10,000	19,912	Revegetation conducted April 2008
<b>Hecla Project Management Costs:</b>							
Labor			0	2,266	7,909	10,175	
Travel expenses			0	0	1,312	1,312	
<b>Subtotal Long Term Monitoring</b>	<b>0</b>	<b>0</b>	<b>522</b>	<b>61,555</b>	<b>76,440</b>	<b>137,995</b>	
<b>Total Pond 2 Final Closure</b>	<b>715,400</b>	<b>655,018</b>	<b>522</b>	<b>1,288,948</b>	<b>76,440</b>	<b>1,365,388</b>	

**MONSTER ENGINEERING INC**  
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*Paul Glader*  
11/12/08

**MEMORANDUM**

TO: Paul Glader (Hecla Mining Company)  
FROM: Doug Gibbs (Monster Engineering Inc.)  
DATE: 11/4/08  
SUBJECT: **Surface Monument Survey Data Review – Apex Site**

Surface monument surveying has been conducted quarterly at the Apex Site by Alpha Engineering since January of 2006. Based on data collected through July 2008:

- 1) Settlement rates of most monuments have decreased to near zero.
- 2) Settlement of the reclaimed impoundment top surface has stabilized with only two monuments decreasing minimally over the first six months of 2008.

All data shown in the following table and graphs has been corrected based on maintaining a zero elevation change at Monument #10 (at the gate). This monument (#10) is the baseline from which all other monuments are surveyed, is located outside of the impoundment, and should show no movement between monitoring periods. Total and 2008 survey monument elevation changes since installation are shown in the following table.

Monument	Total Elevation Change Jan. 4, 2006 to July 8, 2008		Elevation Change - 2008 Dec. 13, 2007 to July 8, 2008	
	(feet)	(inches)	(feet)	(inches)
1	-0.11	-1.3	0.00	0.0
2	-0.09	-1.1	0.00	0.0
3	-0.20	-2.4	-0.02	-0.2
4	-0.04	-0.6	0.00	0.0
5	-0.05	-0.6	0.00	0.0
6	-0.03	-0.4	0.00	0.0
7	-0.27	-3.2	0.00	0.0
8	-0.15	-1.8	-0.01	-0.1
9	-0.09	-1.1	0.00	0.0
10 (baseline @ gate)	NA	NA	NA	NA
11 / Main (impoundment center)	-0.05	-0.6	0.00	0.0
<b>Average</b>	<b>-0.11</b>	<b>-1.3</b>	<b>-0.00</b>	<b>-0.0</b>

NA – baseline monument - data corrected to show no movement

Most apparent monument movement from period to period can be attributed to surveying accuracy limitations as the data shows individual monuments both increasing and decreasing in elevation. However, when data for all monuments is "corrected" by keeping the baseline monument's (#10) elevation change to zero, then a general trend of decreasing elevations becomes apparent.

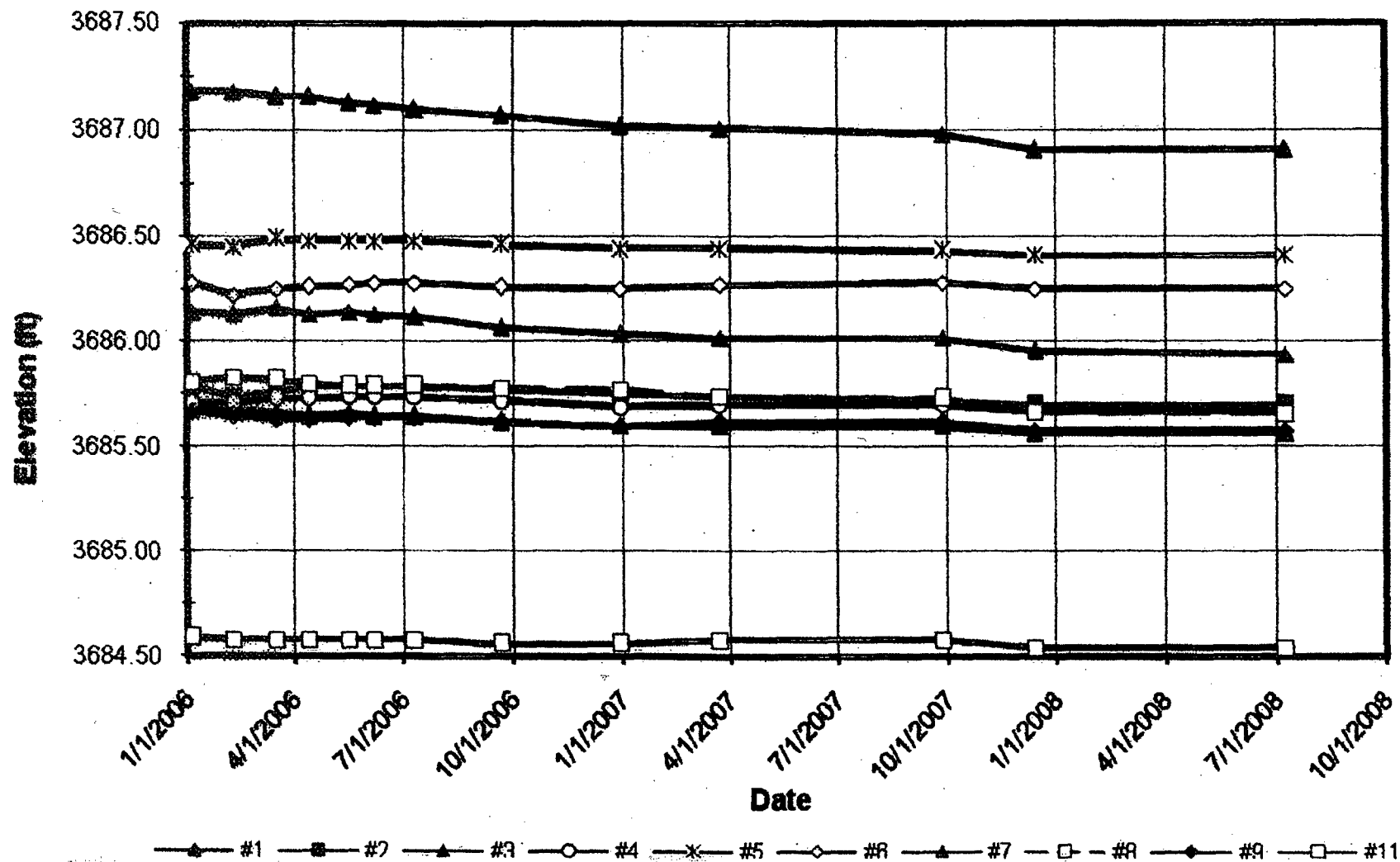
In summary the data shows that roughly the northern half of the impoundment has settled between 0.05 and 0.27 feet. The southern half of the impoundment has remained very consistent with very little to no settlement (0.0 to 0.05 feet). The largest measured settlement is, as expected, near the center of the impoundment (monitor #7) at -0.27 feet. Slightly greater settlement in and nearer the center of the impoundment is to be expected as significant quantities of fill were placed in this area during construction. Additionally, greater settlement should be expected on the northern half of the impoundment based on the locations and methods utilized to place the original cover materials (prior to final reclamation activities). According to Chris Gypton and Alan Wilson, cover materials were initially placed in the southwest corner and generally moved across the impoundment towards the northeast corner. This created a mud wave of unconsolidated waste which moved towards this corner, and eventually a thicker deposit of unconsolidated waste materials.

There continues to be no concerns to date with settlement. There are no low spots and no signs of ponding rain water. As expected with long-term consolidation, the data shows that settlement rates are slightly decreasing over time. Consolidation of waste materials and final reclamation cover materials appears to be very minimal and decreasing. Additionally, it is highly unlikely that any liquids are leaving the impoundment.

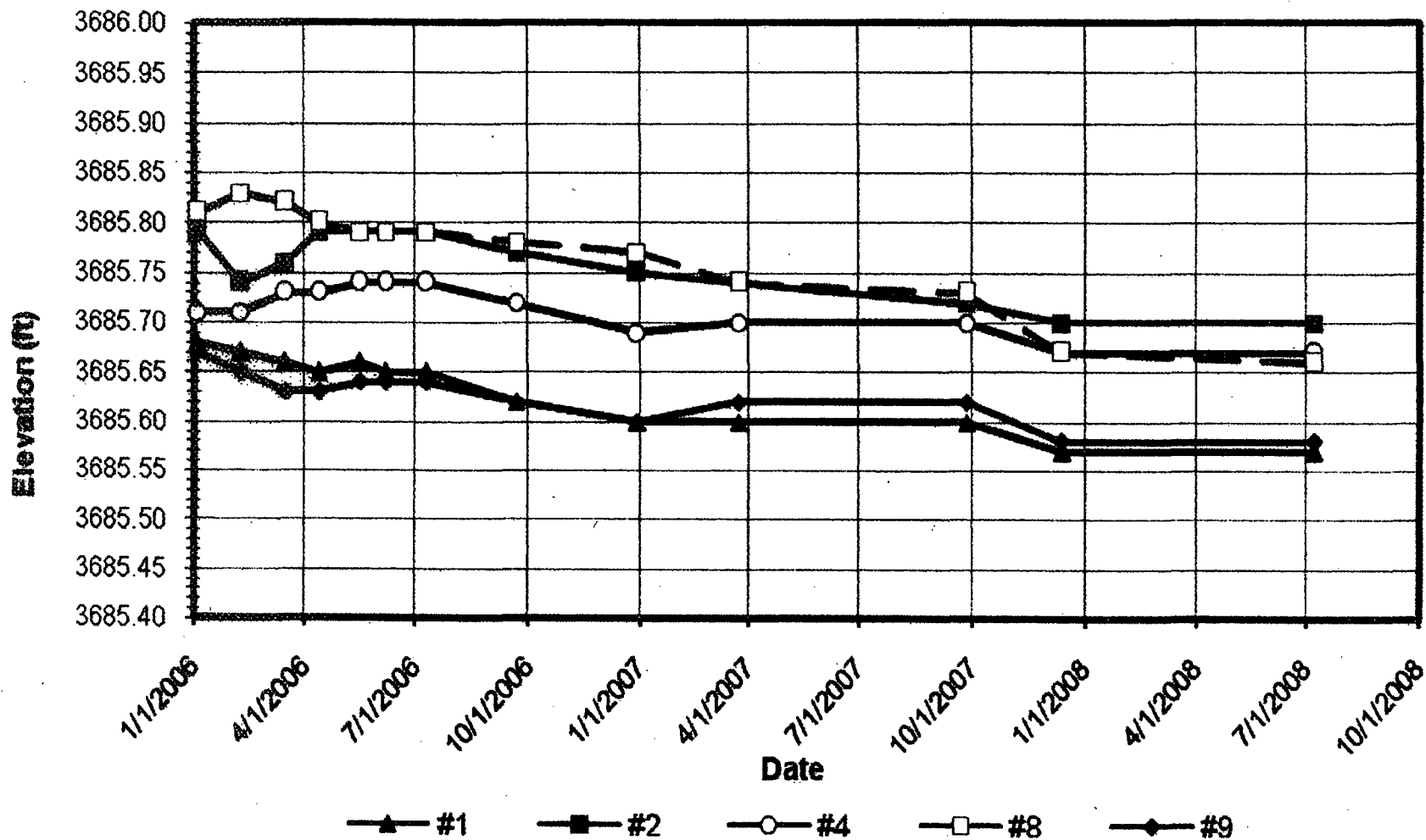
All elevation data provided by Alpha Engineering is presented graphically on the following pages. The first graph shows all monuments (except monitor #10 the baseline point) on a scale that allows all data to be compared. The next five graphs have expanded "Y" axes scales in order to more clearly show elevation changes, and for ease of comparison between graphs. A monument location map (provided by Alpha Engineering) is attached on the last page of this document. Included on this map are contours showing approximate total settlement of the top surface since installation of the monuments.

Based on data collected to date, MEI recommends that Hecia continue with their current plan and collect elevation data semi-annually. Please contact me if you have any questions concerning this review.

## Apex Pond 2 - Settlement Monument Elevations

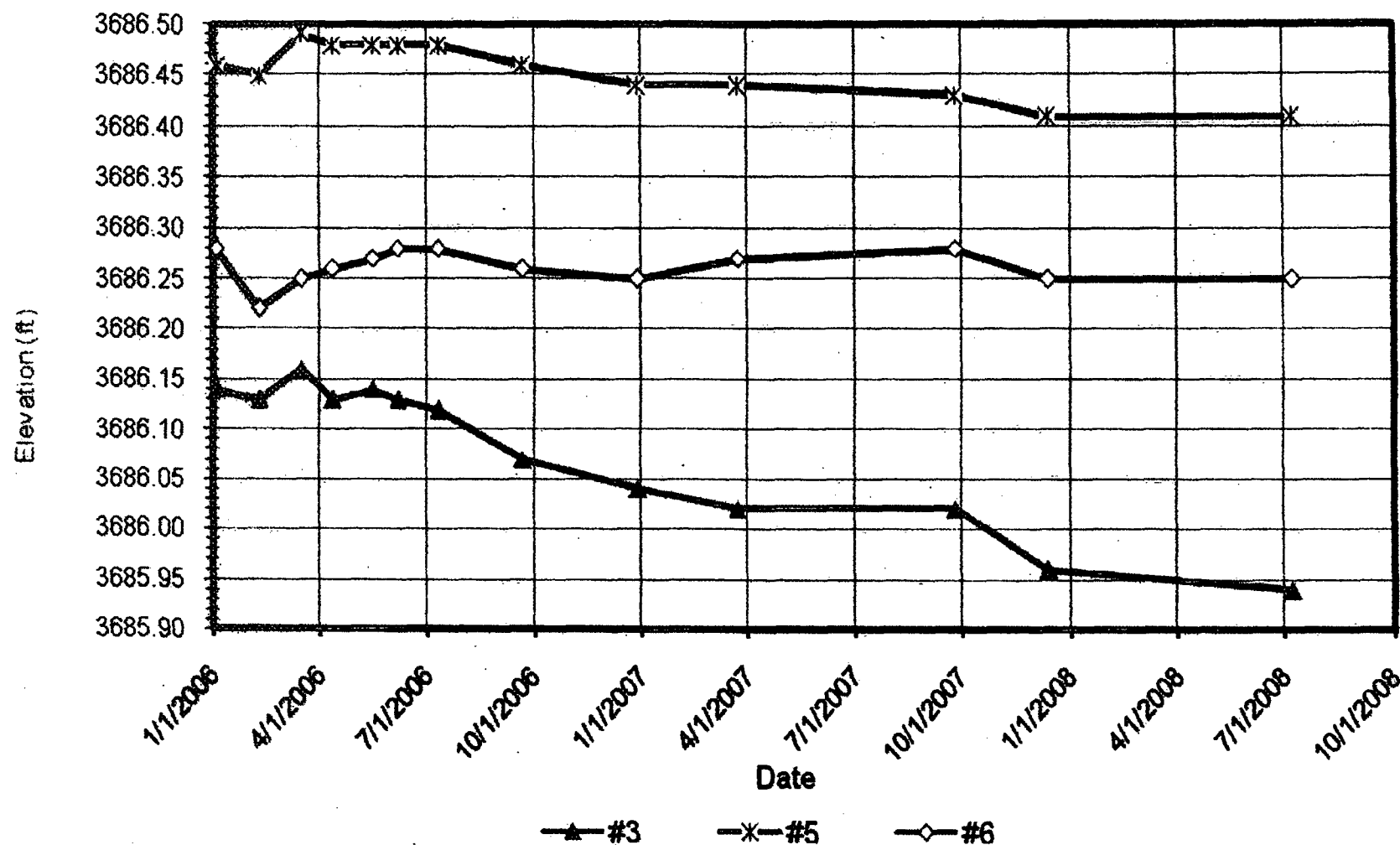


## Apex Pond 2 - Settlement Monument Elevations

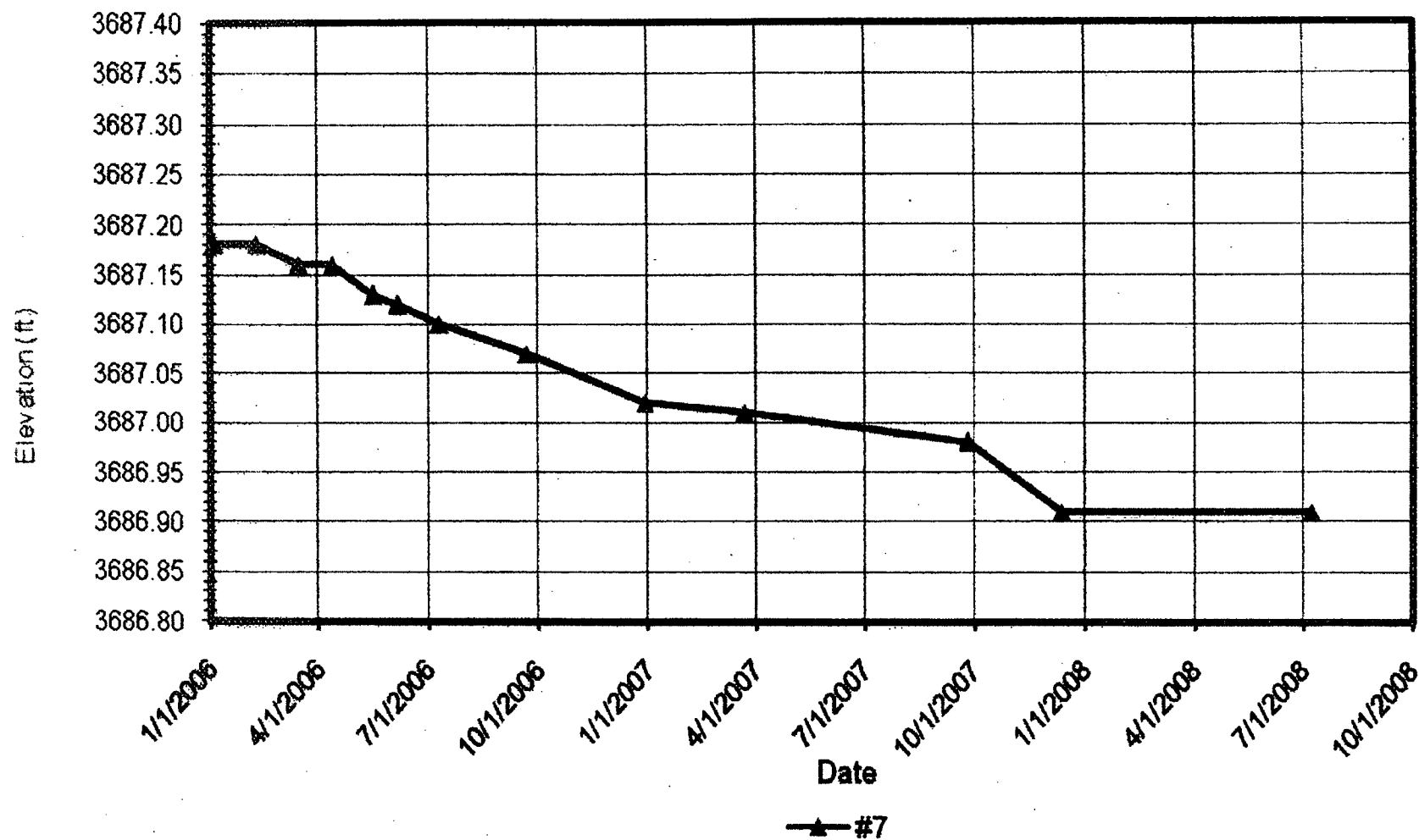




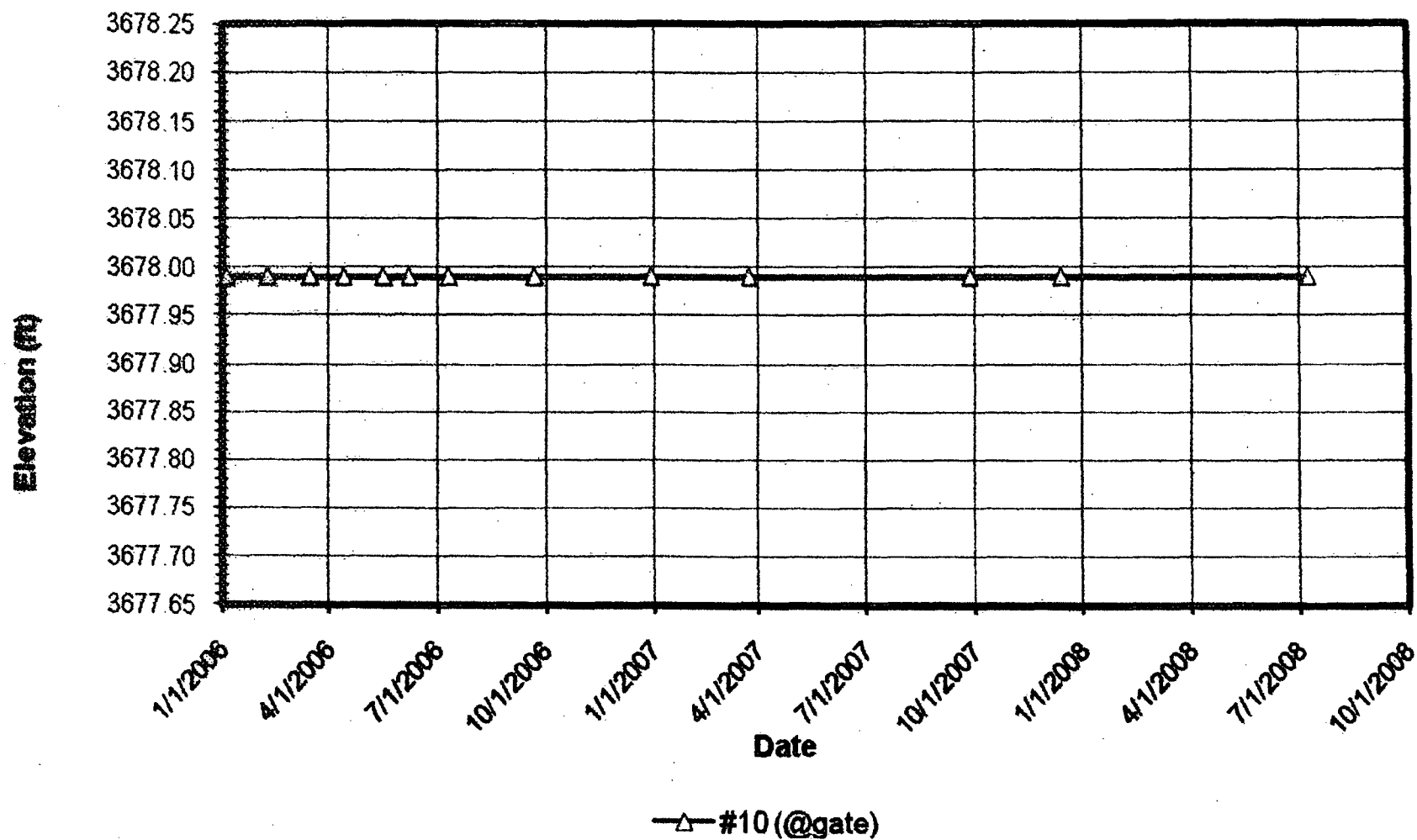
### Apex Pond 2 - Settlement Monument Elevations



### Apex Pond 2 - Settlement Monument Elevations



## Apex Pond 2 - Settlement Monument Elevations



### Apex Pond 2 - Settlement Monument Elevations

